"Calling Home in 2003: JPL Roadmap to Standardized TT&C Customer Support"

Susan C. Kurtik
Jeff Berner
Michael Levesque
JPL Telecommunications and Mission Operations Directorate
Engineering and Operations Office for Telecommunications Services
Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive MS 303-404
Pasadena, CA 91109-8099
818 354-3598
FAX: 818 393-6228
Susan.Kurtik@jpl.nasa.gov

Abstract

The JPL Telecommunications and Mission Operations Directorate (TMOD) provides tracking, telemetry and command (TT&C) services for execution of a broad spectrum of deep space missions. These services include end-to-end hardware and software systems and customer interfaces that extend from NASA's Deep Space Network to the Advanced Multimission Operations System (AMMOS) at JPL to remote customers around the world. The DSN telecommunications systems include low-noise receivers, digital signal and tone processing, signal decoders, and tracking, telemetry, and command systems. The AMMOS services include mission control, data transport, tracking, telemetry, and command data delivery, spacecraft and ground system monitoring, and mission data management.

The TMOD Telecommunications Service System is undergoing extensive upgrades and advanced development that will result in standardized customer interfaces and interoperable systems for data access and reciprocal support. As this work progresses, the boundaries between the DSN and JPL AMMOS systems will become increasingly interlinked and the user interfaces will undergo significant change and standardization. This paper will describe the roadmap to changes in JPL's end-to-end TT&C hardware and software systems, customer interfaces, data products, data access, and customer service boundaries.

The roadmap will include changes to JPL's tracking, telemetry, and command mission services as a result of: (1) the Deep Space Network Simplification Project; (2) new CCSDS file delivery protocols, SLE services, and monitor data interfaces; (3) redesign of the tracking data delivery system and its integration with telemetry services; (4) new command request and file uplink services; and (5) evolution of the AMMOS mission data systems with new flight-ground architectures and web-based interfaces for data delivery and data management. This paper will focus on the changes underway in evolving these TT&C facilities, including the technical techniques, challenges, and impact to customer support through the year 2004.

Submitted to the 6th International Symposium on Space Operations – Space Ops 2000
June 19-23, 2000, Toulouse, France